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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 21 and 74 to	)	MM Docket No. 97-217
Enable Multipoint Distribution Service	)	
and Instruction Television Fixed	)	File No. RM-9060
Service Licenses to Engage in Fixed	)	
Two-Way Transmissions	)	

CISCO COMMENT IN SUPPORT OF RECONSIDERATION

Cisco Systems, Inc. supports a relaxation of the antiquated MDS/ITFS frequency tolerance rules. These strict frequency tolerance rules, a relic from the analog era of wireless cable, provide no meaningful benefit to service providers, consumers, or other users of the spectrum. But the frequency tolerance rules increase the cost service providers pay for transmitting equipment, which ultimately results in higher prices for end users. This makes two-way wireless cable less competitive with other emerging two-way broadband platforms. Cisco also supports changes to the licensing rules, including a relaxation of the subscriber response station notification requirements, in order to make wireless cable a consumer-friendly and competitive broadband service.

Cisco is the worldwide leader in Internet networking equipment, producing and integrating routers, LAN and ATM switches, dial-up access servers and network management software. Cisco is now developing wireless communication technology and products to make two-way wireless cable a competitive reality. Cisco's products, featuring new digital signal processing and radio frequency techniques, communicate at a data rate that is an order of magnitude greater than today's wireless LAN products, even through heavily obstructed paths.

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List A B C D E

While Cisco has not formally participated in this proceeding until now,[1] Cisco brings to the Commission the balanced perspective of an equipment manufacturer that simply wants two-way wireless cable to succeed.

I. The Frequency Tolerance Rules Should Be Modified to Require A Frequency Tolerance of .001 Percent for Main and High-Power Booster Station Transmitters.

For main and high-power booster stations, the FCC has retained a ± 1 kHz frequency tolerance requirement.[2] This requirement adds to the cost and complexity of equipment, but serves no purpose because – as the Commission has observed – frequency tolerance is not relevant to digital transmissions. Cisco proposes that the FCC require that main and high-power transmitters maintain a frequency within .001 percent of the assigned frequency, rather than ± 1 kHz.

The existing frequency tolerance rules were enacted to permit analog stations to use frequency offset, because frequency offset allows better co-channel sharing between nearby stations.[3] In the early years of MDS and ITFS, the frequency tolerance requirements were more relaxed than today's ± 1 kHz standard. Indeed, for some MDS and all ITFS channels the frequency tolerance standards were more relaxed than the .001 percent standard advocated by Cisco, and no MDS channels had a stricter frequency tolerance standard than .001 percent.[4] But

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[1] However, Clarity Wireless, Inc., which has been acquired by and absorbed into Cisco, filed an *ex parte* comment in this proceeding on June 1, 1998.

[2] 47 C.F.R. §§ 21.101(a) n.2, 74.961(a); Report & Order, Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions, 13 FCC Rcd. 19112, 19127 (1998) ["MDS/ITFS Two-Way Order"].

[3] See Report & Order, Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands Affecting: Private Operational-Fixed Microwave Service, Multipoint Distribution Service, Multichannel Multipoint Distribution Service, Instructional Television Fixed Service, and Cable Television Relay Service, 5 FCC Rcd. 6410, 6420 (1990).

[4] Previously, all ITFS stations were required to maintain the frequency of their visual carriers within 60 kHz of the assigned frequencies. For channels 1, 2, and 2A, the visual carrier was required to be contained within

at the beginning of this decade, the Commission imposed stricter frequency tolerance requirements solely to "allow for frequency offset as an engineering technique to place stations close together."[5]

In permitting digital transmissions, the Commission concluded that, because frequency offset was not a viable technique in a digital world, frequency tolerance was not relevant, at least for digital modulation other than Vestigial Sideband.[6] Accordingly, the Commission initially did not impose a frequency tolerance requirement on digital transmissions by MDS and ITFS licensees.[7] However, in promulgating two-way rules, the Commission re-established frequency tolerance rules for digital transmissions, even though the Commission recognized that frequency tolerance requirements make equipment more costly and more complex.[8]

The Commission should, as urged by the petition of Spike Technologies, reconsider this frequency tolerance requirement. The Commission may not have fully considered just how much additional cost the ± 1 kHz frequency tolerance requirement imposes on operators attempting to build-out a two-way system. If ± 1 kHz frequency stability is to be maintained in the MDS and ITFS frequencies, a component of each and every main and high-power booster transmitter will have to be an "ovenized" crystal oscillator. Compared to conventional

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.001 percent of the nominal frequency, while for the E and F channels, the visual carrier was required to be contained within .005 percent of the nominal frequency. Id.

[5] Id.

[6] Declaratory Ruling & Order, Request for Declaratory Ruling on the Use of Digital Modulation by Multipoint Distribution Service and Instructional Television Fixed Service Stations, 11 FCC Rcd. 18839, 18859 (1996).

[7] See Notice of Proposed Rulemaking, Amendment of Parts 1, 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees To Engage in Fixed Two-Way Transmissions, 12 FCC Rcd. 22175, 22185 (1997).

[8] See MDS/ITFS Two-Way Order, 13 FCC Rcd. at 19127.

oscillators, ovenized crystal oscillators are bulky and consume large amounts of power. Most importantly, ovenized crystal oscillators are extremely expensive.

If Cisco's proposal to impose a frequency tolerance within .001 percent of the assigned frequency were adopted, equipment manufacturers could use temperature-compensated crystal oscillators in MDS and ITFS transmitting equipment. The wholesale cost of these temperature-compensated crystal oscillators is approximately $8 to $20. Ovenized crystal oscillators, in contrast, cost $80 to $100 wholesale. So the FCC's strict frequency tolerance requirements require manufacturers to install oscillators that are four to twelve-and-one-half times more expensive than necessary. Thus, there will be a material increase in the cost of building a two-way system if ovenized crystal oscillators must be used in every high-power booster (and main) station transmitter.

This additional cost brings with it no meaningful benefit. Frequency offset, the original justification for such strict frequency tolerance rules, is not viable with digital transmissions. Accordingly, instances of co-channel interference cannot be ameliorated by frequency offset. Likewise, adjacent channel interference will not be increased by relaxed frequency tolerance requirements because there will still be a .001 percent frequency tolerance standard and because of the continued applicability of the Commission's spectral mask requirements.[9] Finally, to the extent that the Commission is concerned about end users, it is far less expensive to build receivers that can cope with frequency variations than to include high-stability oscillators in the transmitters themselves.

[9] See 47 C.F.R. § 21.908.

II. The FCC Should Relax Its Application, Licensing, and Installation Rules to Speed Deployment of Two-Way Wireless Services.

Several petitioners have sought reconsideration of the MDS/ITFS application, licensing and installation rules. Some of these changes could speed deployment of two-way wireless services and make wireless cable a competitive broadband platform. Accordingly, the FCC should: (a) modify its response station notification requirement; (b) apply its expedited licensing procedures to ITFS major modification applications; and (c) adopt procedures to expedite resolution of disputes.

A. The FCC Should Modify Its Response Station Notification Requirement.

Several petitioners have sought the elimination or relaxation of the requirement that a wireless cable operator, before activating a subscriber response station, must provide twenty-day advance notice to any ITFS licensee with a receive station within 1960 feet of that response station. Twenty days is far too long for any consumer or business to wait for service. Other potential two-way broadband service providers – cable, ILEC digital subscriber line, and even LMDS, DBS, and SMATV – can provide consumers and businesses what they want: Immediate access to high-speed Internet connections. Wireless cable cannot succeed if others can deliver today what wireless cable can only promise in three weeks.

Cisco recommends that the FCC relax the notification requirement to provide that notice must be given at least one business day before the activation of the subscriber response station. In addition, the response station notification requirement should be eliminated if MDS 1 or MDS 2 (or 2A) are the only channels used for upstream communications, since these channels are located far from the ITFS frequencies. Moreover, ITFS licensees should be permitted to opt-out of this notification requirement entirely – the many ITFS licensees that lease spectrum to

wireless cable operators will likely conclude that this rule will only hinder consumer and business acceptance of two-way wireless cable while providing little meaningful benefit.

The professional installation requirements likewise will hinder consumer acceptance of two-way wireless cable. Moreover, the professional installation requirement is a "cure" far broader than the alleged illness, because the professional installation requirement is apparently applicable to all subscriber response stations, not only those located within 1960 feet of an ITFS receive site. However, were the Commission to conclude that only the advance notification or the professional installation requirement should be eliminated or relaxed, Cisco believes that the advance notification requirement is the more onerous of the two unnecessary rules. In Cisco's experience, some (but not all) consumers will be willing to tolerate a requirement of professional installation, but few if any consumers will be willing to tolerate a twenty-day wait for activation of service.

B. The FCC Should Apply Its Expedited Licensing Procedures to ITFS Major Modification Applications.

The streamlined processing system for ITFS booster stations and response station hubs should be extended to ITFS major modification applications. The process of building out two-way systems may require existing ITFS facilities to be modified. The transformation of a one-way video programming service to a two-way multimedia service is likely to require, for example, some main station transmitters to be relocated or to change polarization. Service to the public depends upon all facility changes being completed, so it makes better sense to subject ITFS major modification applications to the same application requirements as booster and hub response stations. Piecemeal development of advanced systems does not benefit consumer or business users and scares away investors.

C. The FCC Should Adopt Procedures to Expedite Resolution of Disputes.

Several commenters have suggested implementing procedures for expeditiously resolving interference claims. Cisco supports adoption of dispute-resolution procedures because parties may not be able to reach an agreement to resolve interference claims. Although there is a long history of cooperation between and among MDS and ITFS licensees, not every licensee has always acted reasonably, and there should be some procedure for quick adjudication of interference disputes. Otherwise, private negotiations may turn into months or even years of stalemate if one licensee does not care how quickly another licensee is able to offer service. Indeed, even the possibility of such stalemate will reduce the incentive to invest in two-way facilities.

Conclusion

For the foregoing reasons, the FCC should revise its MDS/ITFS frequency tolerance rules and should modify the response station notification requirement, apply the expedited licensing procedures to ITFS major modification applications, and adopt procedures to expedite resolution of disputes.

Respectfully submitted,

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Dated: February 4, 1999

CERTIFICATE OF SERVICE

I hereby certify that I have on this 4th day of February, 1999 served the foregoing Cisco Comment in Support of Reconsideration by placing a true and correct copy of the same in the United States mail, postage prepaid, addressed to the following:

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